



GRETCHEN WHITMER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY
LANSING



LIESL EICHLER CLARK
DIRECTOR

May 28, 2021

VIA E-MAIL and U.S. MAIL

Mr. Paul Ruesch
On-Scene Coordinator
United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard (SE-5J)
Chicago, Illinois 60604-3590

Dear Mr. Paul Ruesch:

SUBJECT: Michigan Department of Environment, Great Lakes, and Energy (EGLE) comments on the Area 4 Time Critical Removal Action (TCRA) 30 Percent (30%) Design Package, Kalamazoo River Operable Unit 5 (OU5) Area 4, Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund site.

EGLE has reviewed the subject Area 4 TCRA 30% Design Package which was submitted on May 11, 2021, and included four standalone submittals: a table of contents; a set of preliminary, conceptual design drawings that provide general remediation and restoration details for the removal action including proposed dredge prisms, a proposed grade control structure that would be installed following removal of the Trowbridge dam, and proposed bank treatment options; a Dewatering and Treatability Testing Summary, and; a brief submission cover letter that provides a summary of the 30% design package, a plan for future submittals, and a proposed, partial list of submittals that will be included with the 60% design package. A work group meeting was hosted by GEI and NCR on May 19, 2021, to provide additional information on the 30% design package and solicit feedback from EGLE, MDNR, and the USEPA.

The cover letter and detailed comments (attached) EGLE is providing on the 30% design documents are based on our participation in technical work group meetings, bi-weekly project meetings, and review of comment letters and response to comments EGLE has provided on several submittals, including the removal work plan and field sampling plans (FSPs), concerns raised during meetings, and formal comments authored on submittals are also incorporated into our cover letter and detailed comments on the 30% design package.

Text in the submission cover letter states that several items included in the 30% design will be updated once the 2021 pre-design investigation (PDI) data becomes available. These include: design cross sections, contaminant concentrations based on new locations and previously sampled locations that were reoccupied to obtain deeper

samples, plan and profile drawings showing the sediment surface, the target dredge elevations, and topographic elevations. Although the cover letter text describes that these elements will be updated, it does not describe the significant impact these updates will have on the next phase(s) of design, the reason(s) why a 2021 PDI was needed, how results from the 2021 PDI may impact other analyses that are driving decision making (i.e., conclusions from the hydrodynamic model), or how incorporating data collected during the 2021 PDI will change our understanding of the activities needed to complete the removal action.

Ideally, at a 30% design, the PDI would have been all or mostly completed so that key tools (e.g., hydrodynamic model) used to aid in the development of the design and construction drawings that are presented would be more robust and closer to completion than what was submitted with the 30% design package. Because the PDI was not completed prior to initiation of the removal design and significant changes to the conclusions and concepts in the 30% design will likely occur as the 2021 PDI data is received, submission of the 60% design should trigger a thorough review and comparative analysis between conclusions presented in the 30% and 60% design packages. At the preliminary design phase, it is appropriate to begin examining and considering how the engineering design parameters incorporate State (and Federal) applicable or relevant and appropriate requirements (ARARs) and requirements that would reasonably be expected in the Area 4 Record of Decision (ROD) (e.g., objectives and goals consistent with RODs already authored for other Areas of OU5). With large changes coming to the design at the 60% design stage or later it is difficult to evaluate the 30% design at the level needed to determine if it would meet the substantive requirements of the State permitting process and Superfund goals and objectives. Therefore, at the 60% design stage (or later), EGLE staff may request specific information that will ultimately be needed to determine if the project would meet the State's substantive requirements and ARARs and to better evaluate if the proposed design and removal action will be sufficient to meet Superfund remedial goals and objectives. Although the 30% design is not complete enough to evaluate the project in its' entirety and begin to make these determinations, EGLE has identified a few specific examples of items presented or incorporated in the 30% design that may not meet State and Federal ARARs and/or EPA Superfund removal criteria in the Action Memorandum and remedial goals and objectives anticipated to be included in the Area 4 ROD.

- The design that has been produced allows for a significant quantity of sediment to mobilize from the impoundment and erode into downstream Areas of the Superfund site. Preliminary results from the hydrodynamic model that were shared during the work group meeting suggest that 300,000 cubic yards of sediments would erode in the first year following dam removal, which is approximately four times greater than the estimated sediment load in a normal year. This estimate may be lower than what would happen if the proposed design were approved and implemented since it does not include contributions from lateral channel migration and the total depth of erosion (depth to the alluvial surface) is based on a limited set of data that will be updated at the 60% design and, generally speaking, the depth to the alluvial surface identified during the

2021 PDI is greater than was previously understood. The current design does not consider or propose any active sediment management for the unsampled Subareas (Subareas C, D) or for sediments within the sampled Subareas (Subareas E, F, G) that are deeper than the shallowest one-foot interval in any sample location that is less than the applicable removal action level (i.e., 1 part-per-million (ppm) of total PCBs for sediments and 5 ppm of total PCBs for bank soils). Management strategies (e.g., dredging and/or excavation and disposal) for sediment and/or bank soils in addition to what is proposed in the 30% design will be required.

- Key components and features engineered as part of the TCRA (e.g., remediation and restoration of riverbanks using the proposed bank treatments) will need to generally include a sufficient pullback of the edge sediments and bank soils to remove contaminated materials and provide the real-estate necessary to slope and construct stable, functional banks that key-in to the native sediments (e.g., alluvium) and provide the appropriate level of energy dissipation.
- Insufficient information was presented to evaluate dam-out hydraulics, including the extent of floodplain inundation, velocities, and shear stresses under various flow conditions. The long-term success of the remedy proposed in this document is dependent on the ability to prevent erosion of contaminated floodplain materials in the channel. Any natural river system requires benching and floodplain access above bankfull, which will likely necessitate additional contaminated sediment and floodplain material removal in many areas across Area 4. Principles, not elements, of natural channel design (NCD) should be applied during the design. If a Superfund remedy is implemented with limited restoration components, the system will be lacking the necessary function. The shared pursuit of attaining river function through NCD, in addition to cleanup goals, that has motivated the State of Michigan to cooperatively participate in projects throughout OU5. The Natural Resource Damage Trustees comment letter on the Area 2 Proposed Plan summarizes the importance of NCD as it relates to Superfund goals very well (excerpt inserted below and slightly modified for applicability to Area 4).

The long-term stability and effectiveness of the river channel along with maintenance of floodplain connectivity are inherent in achieving the long-term goals of the remedial action to keep the channel in place and prevent additional PCB loading into the river. Having sufficient bank-full floodplain capacity reduces the risk of potential future channel erosion and increases the likelihood that bank treatments will remain stable over the long-term. Dissipating flood energy within Area 4 would also minimize the transfer of energy downstream that otherwise could result in erosion downstream in Area 5.

- Although a single, conceptual drawing of a riffle structure is provided in the 30% design, text in the submission letter states, “As a result of comments shared by the agencies during various meetings, a conceptual plan for a grade control structure is also included with the 30% design. This structure is a potential option that could help reduce post-remedy sediment mobility and support future remedial efforts when implementing the remedy selected in the Area 4 Record of Decision. While NCR believes this type of structure is beyond the scope of the TCRA, in order to continue to move the project forward, additional discussion on this topic is welcomed”. Based on language in the submission letter it is unclear if NCR is willing to construct what is shown in the design package or a similar feature with different design specifications. Throughout the pre-design period and into the design phase, EGLE raised significant concerns on key data inputs (e.g., bathymetry, elevations of the pre-dam riverbed, etc.) that have yet to be addressed. EGLE looks forward to engaging with the work group and getting resolution on those items as the Phase 2 PDI data becomes available and a more complete design can be developed. EGLE can only review and comment on what was provided, which is very limited, and we echo previously raised concerns centered around data quality issues for key input parameters that are driving decision making and specifications used in the 30% design package. Considering these factors, EGLE offers the following general comments on the proposed grade control structure as presented in the 30% design package:
 - A grade control structure (e.g., a riffle) will be necessary to ensure a stable channel.
 - The riffle crest elevation that is proposed (646.50 ft) appears to be at least a few feet higher than the pre-dam riverbed elevation in this same location which based on the best available information appears to be at an elevation between 641 ft. and 642 ft.
 - Portions of the proposed grade control structure are steep, very steep. EGLE estimates slopes between 10 and 20 percent over an estimated distance of 50-70 ft from the downstream edge of the proposed fill area (elevation 633 ft.) to the riffle toe (elevation 640ft.).
 - The body of the proposed grade control structure riffle is long and extends approximately 350 feet along the centerline (riffle heel [elevation 640 ft.] to riffle toe [elevation 640 ft.]) and has a proposed crest at elevation 646.5 ft. The length of the proposed grade control structure increases to approximately 425 ft. when considering the total construction footprint, which in this case extends from the downstream edge of the proposed fill area (elevation 633 ft.) to the riffle heel. Slopes across the proposed grade control structure are also steeper than reference reaches on the Kalamazoo River. EGLE calculated slopes between 3.4 and 3.6 percent

over an estimated distance of 380 to 400 ft from the downstream edge of the proposed fill area (elevation 633 ft.) to the riffle crest (elevation 646.5 ft.).

- Only one conceptual drawing was provided in the 30% design so it is impossible to do a comparative analysis between the proposed grade control structure and other cost-effective, constructable, and reasonable alternatives that would normally be evaluated as part of a design and State permitting process.
- Any proposed reuse and/or upland disposal of sediments will need to consider more factors than the PCB thresholds in the Action Memorandum. For example, the ability to reuse sediments is also dependent on things such as the quality of the pre-design investigation and confidence that the full nature and extent of contamination has been defined, work and process controls necessary to handle and separate “contaminated” and “clean” materials, the presence of chemical contamination (e.g., PCB and non-PCB constituents), the appropriateness of the proposed use for the material (e.g., habitat restoration) based on its inherent qualities, and the physical nature and constructability of the material. Paper sludges will not be permitted to be reused or otherwise disposed of on State lands.

If you have any questions, please contact Mr. Daniel Peabody, Environmental Quality Analyst, Remediation and Redevelopment Division at 517-285-3924; PeabodyD@Michigan.gov; or EGLE, P.O. Box 30426, Lansing, Michigan 48909-7926.

Sincerely,



Daniel Peabody
Environmental Quality Analyst
Remediation and Redevelopment Division

Enclosure

cc/enc: Mr. David Kline, EGLE
Mr. John Riley, EGLE
Mr. Joseph Walczak, EGLE
Mr. Luke Trumble, EGLE
Ms. Polly Synk, Michigan Department of Attorney General (MDAG)
Ms. Megen Miller, MDAG
Mr. Mark Mills, Michigan Department of Natural Resources (MDNR)
Mr. Jay Wesley, MDNR
Mr. Patrick Ertel, MDNR

Mr. Brian Gunderman, MDNR

Mr. Matt Diana, MDNR

Dr. Keegan Roberts, CDM Smith

Mr. Jim Saric, United States Environmental Protection Agency

Dr. Lisa Williams, United States Fish and Wildlife Service

WORK PLAN COMMENT / INPUT FORM

Trowbridge Dam TCRA

DOCUMENT NAME: 30% Design Submission; OU5 Allied Paper/Portage Creek/Kalamazoo River Superfund Site; Area 4 Time Critical Removal Action

ITEM NO	REVIEWER	REFERENCE TO GEI SUBMITTAL (i.e., Section X.X, Page XX)	COMMENT (+ reference(s) to support)	SUGGESTION / RECOMMENDATION
1	EGLE	General Comment	An overall legend is provided at the start of the drawing package. It would be helpful to include legends for salient features on all drawings for ease of review and reference.	Add a legend should to each drawing, as needed.
2	EGLE	General Comment	Any proposed reuse and/or upland disposal of sediments will need to consider more factors than the PCB thresholds in the Action Memorandum. For example, the ability to reuse sediments is also dependent on things such as the quality of the pre-design investigation and confidence that the full nature and extent of contamination has been defined, work and process controls necessary to handle and separate “contaminated” and “clean” materials, the presence of chemical contamination (e.g., PCB and non-PCB constituents), the appropriateness of the proposed use for the material (e.g., habitat restoration) based on its inherent qualities, and the physical nature and constructability of the material. Paper sludges will not be permitted to be reused or otherwise disposed of on State lands.	If future submittals explore or propose to reuse or dispose of dredged sediments or excavated bank soils in the upland a more robust discussion on how the identified concerns will be addressed, how the appropriateness of proposed reuse options will be evaluated, and how the suitability of the material for reuse will be evaluated to determine if
3	EGLE	General Comment	Deeper samples that were collected during the Phase 1 and Phase 2 PDI and have been archived should be analyzed to ensure the full nature and extent of contamination is defined and to characterize sediments that under the current design strategy are allowed to erode downstream. Archiving samples provides little to no cost savings since these samples are being analyzed for total Aroclors using EPA Method 8082, which is a cost-effective analysis. Furthermore, the nature of the contaminant release and migration at the Site will lead to horizontally and vertically discrete and discontinuous layers. Therefore, hitting a layer that is less than the applicable thresholds (1ppm and 5ppm) may not indicate that the entirety of the sediment column below that elevation will be below that threshold. Additionally, much of the deeper sediments will mobilize when the dam is removed and it is this project's responsibility to quantify and characterize those sediments that will be mobilized. This will also allow the State to consider allowing on-site disposal and/or reuse of sediments and soils, thus potentially saving money.	Analyze archived samples that provide additional horizontal or vertical contaminant delineation.

DOCUMENT NAME: 30% Design Submission; OU5 Allied Paper/Portage Creek/Kalamazoo River Superfund Site; Area 4 Time Critical Removal Action

ITEM NO	REVIEWER	REFERENCE TO GEI SUBMITTAL (i.e., Section X.X, Page XX)	COMMENT (+ reference(s) to support)	SUGGESTION / RECOMMENDATION
4	EGLE		The design that has been produced allows for a significant quantity of sediment to mobilize from the impoundment and erode into downstream Areas of the Superfund site. Preliminary results from the hydrodynamic model that were shared during the work group meeting suggest that 300,000 cubic yards of sediments would erode in the first year following dam removal, which is approximately four times greater than the estimated sediment load in a normal year. This estimate may be lower than what would happen if the proposed design were approved and implemented since it does not include contributions from lateral channel migration and the total depth of erosion (depth to the alluvial surface) is based on a limited set of data that will be updated at the 60% design and, generally speaking, the depth to the alluvial surface identified during the 2021 PDI is greater than was previously understood. The current design does not consider or propose any active sediment management for the unsampled Subareas (Subareas C, D) or for sediments within the sampled Subareas (Subareas E, F, G) that are deeper than the shallowest one-foot interval in any sample location that is less than the applicable removal action level (i.e., 1 part-per-million (ppm) of total PCBs for sediments and 5 ppm of total PCBs for bank soils).	Management strategies (e.g., dredging and/or excavation and disposal) for sediment and/or bank soils in addition to what is proposed in the 30% design will be required.
5	EGLE	General Comment	Accompanying narrative of specifications is missing.	For future design documents, include an accompanying report to provide details of design specifications not easily provided on drawings, such as a supporting narrative.
6	EGLE	General Comment	EGLE has concerns with the dredge model since it is not a geostatistical model and is highly reliant on manual manipulation from drafters. Furthermore, areas where the modeled surface extends above existing ground are indicative of errors in development of the model. These areas indicate that the linear elevation interpolations have no correlation to the undulations of the bathymetry and must be addressed since they are creating "no-dredge" zones.	<p>Provide comparisons of modeled surface against the CAD "TIN" linear interpolation elevation based surface for review.</p> <p>A. Develop proposed dredge comparison surfaces depicting the depth of cut around each core for review.</p> <p>B. Clearly indicate why a geostatistical modeled surface was not used even though it has been developed.</p> <p>C. Revise the cross sections to clearly depict all items used in development of the CAD surface since that surface is more reliant on the operator to adjust for errors than a sophisticated modeling software. The cross sections should include (cores, depth of contamination and PCB concentration) for evaluation similar to what is done on Superfund river sites like the Fox River (Green Bay WI).</p>

DOCUMENT NAME: 30% Design Submission; OU5 Allied Paper/Portage Creek/Kalamazoo River Superfund Site; Area 4 Time Critical Removal Action

ITEM NO	REVIEWER	REFERENCE TO GEI SUBMITTAL (i.e., Section X.X, Page XX)	COMMENT (+ reference(s) to support)	SUGGESTION / RECOMMENDATION
7	EGLE	General Comment	Data gaps related to depth of cores adjacent to deeper dredge cuts.	The design including cross sections should clearly depict where cores with undefined depth of contamination exist and where shorter cores may not have been extended deep enough. The cross sections must depict all cores and current alluvium surface along with the post dam removal condition to assess future conditions and if the design is sufficient in delineating areas with PCBs, and the horizontal and vertical extent of deeper contamination.
8	EGLE	General Comment	<p>Profiles show native bed in relation to top of sediment, but none of the cross-sections or channel details do.</p> <p>Plans show normal and 10-year WSEL for dam in scenario, but not for dam out scenario.</p> <p>The bank treatment details do not include native bed elevation. Do those proposed treatments tie into native bed?</p> <p>No channel restoration cross-sections, details, etc. were included in the 30% designs. These details are needed to evaluate such things as bankfull area, bankfull width, bankfull depth, entrenchment ratios, width to depth ratios, floodplain connectivity, stability, etc. and compare those to stable sections of the Kalamazoo River.</p> <p>How much material would be left behind to mobilize after the dredge cut? How long would it take to mobilize the volume left behind? At what rate would sediment be transported? EGLE has seen some preliminary figures, but the sediment transport model has not been provided.</p>	Additional information will need to be provided to properly evaluate the design.
9	EGLE	G-03, General Notes, 3rd bullet point	The text states that: "PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL ATTEND A PRE-CONSTRUCTION CONFERENCE AT THE SITE (ORGANIZED BY THE ENGINEER) POTENTIALLY INCLUDING THE TOWNSHIP, OWNER, ENGINEER, UTILITY COMPANIES, U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA), NATIVE AMERICAN TRIBAL REPRESENTATIVE(S), AND ANY OTHER AFFECTED PARTIES."	EGLE would expect to be included in the pre-construction conference. Revise this and future documents accordingly.

DOCUMENT NAME: 30% Design Submission; OU5 Allied Paper/Portage Creek/Kalamazoo River Superfund Site; Area 4 Time Critical Removal Action

ITEM NO	REVIEWER	REFERENCE TO GEI SUBMITTAL (i.e., Section X.X, Page XX)	COMMENT (+ reference(s) to support)	SUGGESTION / RECOMMENDATION
10	EGLE	G-03, Safety Traffic, and Pollution Control, 3rd bullet point	The text states that: "FOR SPILLS THAT IMPACT GROUNDWATER OR SURFACE WATER, IN EXCESS OF THE REPORTING QUANTITIES SPECIFIED IN THE PART 5 RULES, NOTIFY EGLE IMMEDIATELY."	Provide reporting quantities specified in the Part 5 rules for approval.
11	EGLE	G-03, Dredging, 2nd bullet	This text states that: "all areas include an overdredge payment limit as shown on the plan."	This bullet has the only reference to overdredge in the construction set. The cross sections only depict proposed dredge surface. Both a neat line and overdredge elevations are recommended to be depicted in the sections to limit ambiguity. Revise accordingly.
12	EGLE	G-10, Material Management Plan	It is unclear what happens if the stockpile sampling does not pass acceptance criteria as it seems to progress to off-site disposal regardless of the outcome of testing.	Revise the schematic to clarify what steps will be taken if the acceptance criteria for stockpile sampling is not met.
13	EGLE	G-12, River Erosion Control and Sediment Control Plan	While it is acceptable for details of the turbidity curtains to be provided in the final design by the contractor, 30% design drawings should include approximate distances from the proposed water control structure or existing dam.	Provide approximate distances of turbidity curtains from Trowbridge dam or the water control structure as a point of reference.
14	EGLE	C-TD-01, Existing Site Plan	Traffic direction for the gravel access drives should be included consistent with the legend.	Use the arrows provided in the legend to denote traffic direction for the different access drives shown on this figure.
15	EGLE	C-TD-06, Existing Sections Sheet 4 of 4	The sheet pile wall elevations are not labeled.	Consistent with the other sections, include sheet pile wall elevations (top and tip) on this section.
16	EGLE	C-TD-07, Existing Details, Detail 5	The notes state that riprap does not need to be covered with fill but the detail shows some type of fill material above the top of grout elevation between the boulders.	Provide a legend for the material above the top of grout elevation between the boulders. If this is a type of fill then the detail notes need to be revised for consistency. If it is river sediment settles onto the riprap then include a label to denote that. Revise accordingly.
17	EGLE	C-TD-09, Existing Pier Details - Section View	The section indicates that the existing cribbing is assumed to be deteriorated.	Revise future design documents to include additional information regarding the current condition and degree of deterioration of existing cribbing to inform dam removal actions.
18	EGLE	C-TD-10, Overall Site Plan	Traffic direction for the gravel access drives should be included consistent with the legend.	Use the arrows provided in the legend to denote traffic direction for the different access drives shown on this figure.
19	EGLE	C-TD-11, Overall Dam Demolition Sequence Plan	It is unclear how the proposed elevation for dredging the upstream sediment was developed.	Clarify how the target elevation for dredging of upstream sediment was established, e.g., based on the proposed excavation extents downstream of SSP wall or some other design elevation. Also indicate if the dredged sediment will be stockpiled or disposed.
20	EGLE	C-TD-14, Water Control Structure Sections	Size of armoring boulders is missing.	Include the proposed size of armoring boulders, if known.
21	EGLE	C-SA-01 through C-SA-08	Staging areas are mostly proposed on parcels owned by MDNR.	Necessary permit requirements must be coordinated with MDNR for staging areas and land use permits, as applicable.

DOCUMENT NAME: 30% Design Submission; OU5 Allied Paper/Portage Creek/Kalamazoo River Superfund Site; Area 4 Time Critical Removal Action

ITEM NO	REVIEWER	REFERENCE TO GEI SUBMITTAL (i.e., Section X.X, Page XX)	COMMENT (+ reference(s) to support)	SUGGESTION / RECOMMENDATION
22	EGLE	C-EC-100 through C-EC-110	The source of the existing sediment surface is unclear.	Include a note to identify the source of the existing sediment surface shown on the existing condition profiles, i.e., type and year of bathymetry survey.
23	EGLE	C-DE-02 to C-DE-32	The scale and quantity of plan sheets can be improved along with possibly reducing some.	Adjust the scale to 150:1 to eliminate some pages/overlap of viewports. For example, DE-08 and DE-22 likely may be incorporated into fewer sheets by adjusting the scale.
24	EGLE	C-DE-02 to C-DE-33	It is not clear where bank removal is occurring and dredging begins on the plan sheets.	Suggest adding a different hatch for bank removal areas. This distinction would be helpful.
25	EGLE	C-DE-02 to C-DE-33	TSCA dredge areas are not depicted on plans	Add all TSCA areas and polygons to the plan figure set.
26	EGLE	C-DE-02 to C-DE-32	It is unclear how the dredge surface was developed.	Add notes describing how the elevation model was developed to this sheet or the general notes page.
27	EGLE	C-DE-02 to C-DE-32	It is unclear exactly where the cross sections are relative to bathymetry and existing cores. It is also unclear if the are depicted looking upstream or downstream	Add cross section markers showing extents of sections so the reviewer can clearly see where each section is.
28	EGLE	C-DE-02 to C-DE-32	The alignment line blends into the dredge hatch.	This line is the marker for all of the cross sections and it would be helpful if the line was darker. Suggest revising.
29	EGLE	C-DE-02 to C-DE-32	The existing sediment cores blend into the dredge hatch.	The core used to develop the dredge model should be more pronounced or less shaded. Suggest revising.
30	EGLE	C-DE-06 to C-DE-11	Dredging and bank removal are not depicted on these plans.	These sheets should be removed from the drawing package if dredging or bank removal is not proposed here. Revise as necessary.
31	EGLE	DE-100 to DE-145	The cross sections do not notate if you are looking upriver or down river. this could be remedied by adding section callouts on the C-DE-02 to C-DE-32 Sheets or adding a not to the sections.	Add cross section markers showing extents of sections so the reviewer can clearly see where each section is.
32	EGLE	DE-100 to DE-145	It is difficult to differentiate between line types for existing ground and proposed dredge cut.	Change the line types and consider a vertical exaggeration to assess the thickness of dredge cut.
33	EGLE	DE-100 to DE-145	It is unclear how the existing data influenced the design contours.	Cores used to develop the model should be added to the cross sections. A marker indicating the core chemistry, sediment type, and depth of contamination should be added and compared to the modeled surface surrounding the core. Revise accordingly.
34	EGLE	DE-100 to DE-145	The dredge sections are a bit clustered and difficult to read.	Add a legend to each page or callouts on each section. Ideally the dredged area should be hatched for easier review.
35	EGLE	DE-100 to DE-145	The dredge sections are a bit clustered and difficult to read.	The desire to limit pages on a large document is acknowledged, however increasing the vertical scale of the sections would make review of the dredge design easier. Consider a 2x or 5x exaggeration. Revise as appropriate.
36	EGLE	DE-100 to DE-145	TSCA dredge areas are not depicted on the cross sections	Depict the horizontal and vertical extent of TSCA material on the cross sections. Clearly indicate where overburden, buffer and the TSCA zones will be removed and how that material will be dredged relative to non-TSCA sediments.

DOCUMENT NAME: 30% Design Submission; OU5 Allied Paper/Portage Creek/Kalamazoo River Superfund Site; Area 4 Time Critical Removal Action

ITEM NO	REVIEWER	REFERENCE TO GEI SUBMITTAL (i.e., Section X.X, Page XX)	COMMENT (+ reference(s) to support)	SUGGESTION / RECOMMENDATION
37	EGLE	DE-100 to DE-145	Provide a rational for cross sections that show the >1ppm PCB line above the existing sediment surface. RM44.95 between stations -30 and +50 is a good example of an area where the model diverges from the bathymetry data. This also occurs on multiple other sections including but not limited to: 44.96, 44.98, 45.01, 45.02, 45.03, 45.04, 45.056, 45.05, 45.06, 45.07	Verify the dredge model for accuracy. If dredging is not occurring the dredge hatch on the plan sheets should be removed. This is likely an issue with TIN based non-modeled CAD surfaces, the depth based model is preferred or proper editing of the CAD surface should be conducted including swapping edges and manual adjustment of non working contour interpolations.
38	EGLE	DE-100 to DE-145	It could be easier to find the cross sections on the C-DE-02 to C-DE-32 sheets.	Add a reference indicating the sheet in which the section is located. This would be helpful to quickly reference the corresponding plan for each section.
39	EGLE	DE-100 to DE-145	Proposed sheet pile walls are not depicted in the sections.	Add proposed sheet pile walls to the sections where applicable.
40	EGLE	DE-100 to DE-145	At river sections where sheet pile walls are not proposed at the ends of the channel, the current design depicts up to 10 ft vertical cuts that just end at the riverbank. Daylight of the slopes have not been provided and will need to be reviewed to assess the design.	Provide some level of design for daylighting the dredge design surfaces.
41	EGLE	DE-100 to DE-145	Bank removal is not included on the cross sections. All areas where a >5 PPM PCB elevations are present do not have a proposed excavation label.	Add bank removal to the design on all applicable sections, or change the title to Dredging and Riverbank Modeled Surface.
42	EGLE	DE-100 to DE-145	The <5 PPM PCB surface does not connect to the dredge design model.	An interpolation should be developed to connect the surfaces in areas that have between 1 and 5 PPM between the sediment and adjacent riverbanks. These should be depicted on the figures.
43	EGLE	C-DE-104	at RM 45.23 there are Areas with >1 PPM PCBs not shown as to be Dredge between 105 and 130.	Add a dredge line for this area.
44	EGLE	C-DE-105	at RM 45.27 there is a gap between modeled contamination at + 50 to 100. at +100 there is no dredge line.	Add a proposed dredge line to connect these areas.
45	EGLE	C-DE-115 to C-DE-129	The title of these sheets is Dredging and Bank Removal however the cross sections do not depict dredging or bank removal.	Remove sheets or change the title as appropriate.
46	EGLE	C-DE-130	Subarea F Mile 0.01 and 0.02 are missing proposed dredge elevations.	Update sections to include dredging elevation.
47	EGLE	C-DE-138	Subarea F Mile 0.49 through 0.52 are missing proposed dredge elevations or have gaps between contamination surfaces.	Update sections to include dredging elevation.
48	EGLE	C-RR-201	Three conceptual bank treatments are displayed varying from soft to hard armoring. Hard armoring techniques should only be used when bioengineering is not feasible.	Define the criteria that will be used to select bank treatments.
49	EGLE	C-RR-202	The cross section on the bottom of the page should indicate where dredging is required to build the riffle. The current plan shows a dredge surface above the existing mudline and proposed items below existing with no dredging.	Provide the dredge design in this area required to build the riffle.

DOCUMENT NAME: 30% Design Submission; OU5 Allied Paper/Portage Creek/Kalamazoo River Superfund Site; Area 4 Time Critical Removal Action

ITEM NO	REVIEWER	REFERENCE TO GEI SUBMITTAL (i.e., Section X.X, Page XX)	COMMENT (+ reference(s) to support)	SUGGESTION / RECOMMENDATION
50	EGLE	C-RR-202	Proposed fill in the scour hole from rubblizing the existing dam is acceptable, but must be clean and free of debris with reinforcing steel removed flush with the concrete surface and then must be capped with a minimum of 1 foot of natural stone.	Update the design specifications to include removal of debris and reinforcing steel from rubbelized concrete and include a requirement of at least a 1 foot stone cap.
51	EGLE	C-RR-202	<p>The proposed riffle appears to be about 4 to 5 feet above the native bed in that location based on interpolation of data in the design and data collected by EGLE that is not included in the design.</p> <p>How does the proposed riffle compare to reference reach riffles? In size, slope, configuration, etc.?</p>	<p>Additional information and discussion regarding the design specifications and function of the proposed grade control structure will be needed.</p> <p>For example, what alternatives were considered? what were the pros and cons of those alternatives? why was the proposed riffle crest elevation selected? How does the configuration of the propose grade control structure compare to reference reach riffles? etc.</p> <p>A reasonable alternative to what is proposed would be to design the riffle that best fits the physical evidence currently available based on prediction of bed slope between known riffles above and below the Trowbridge dam. Secondly, develop an adaptive management plan that outlines necessary steps if dewatering and/or PDI2 reveal a riffle at River Mile 44.95 higher than the expected approximate 642.5 ft. This could include particle size evaluation to determine resistance to predicted critical shear stresses. If a riffle is not present at any elevation at River Mile 44.95, plan to construct new riffle at the predicted slope line developed between the known riffles. As part of the plan, passive sediment transport impacts can be dealt with through various methods to minimize downstream impacts.</p>
52	EGLE	C-RR-202	The proposed riffle has a slope of approximately 1.8% for the first 325 feet, but then gets very steep at the end where it dives into the scour hole, almost 20%.	EGLE will need to see the hydraulic model to see what implications this has for flow depth, velocity, stability, etc.